

WE CLAIM:

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1. Automatic apparatus for attaching tags to articles comprising means for holding a plurality of tags, tag support means spaced from said tag holding means, vacuum tag transport means for removing tags, one at a time, from said tag holding means and placing them on said tag support means, means for clamping the tag on said tag support means, the article to be tagged being situated proximate to said tag support means, fastener dispensing means comprising a hollow needle through which fasteners are ejected, means for moving said fastener dispensing means relative to said tag support means to cause said needle to pass through the tag and article, and means for actuating said fastener dispensing means.
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2. The apparatus of Claim 1 further comprising anvil means normally spaced from said tag support means. 103 wa cyl. 25
3. The apparatus of Claim 2 further comprising means for advancing said anvil means towards said tag support means to hold the article therebetween.
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4. The apparatus of Claim 3 wherein said anvil advancing means is actuated before said fastener dispensing means. F. 8-13
5. The apparatus of Claim 2 wherein said anvil means comprises a needle receiving recess. F. 1
6. The apparatus of Claim 1 wherein said tag transport means moves a tag through a first path section, wherein the tag is moved to a plane substantially perpendicular to said needle and then through a second path section, wherein

the tag is moved substantially within said perpendicular plane, into alignment with said tag support means. *F. 7*

7. The apparatus of Claim 1 wherein said tag transport means comprises a linearly moveable carriage, an arm with a suction cup and means for rotatably mounting said arm on said carriage. *F. 6 8 7*
8. The apparatus of Claim 7 wherein said arm mounting means comprises means for keying said arm to said carriage such that said suction cup is coplanar with the lead tag in said tag holding means, when the tag is engaged by the suction cup. *F. 6 8 7*
9. The apparatus of Claim 1 further comprising a work surface and means for position adjustably mounting said tag holding means on said work surface for independent positioning in two directions. *F. 6 8 7*
10. Automatic apparatus for attaching tags to articles comprising means for holding a plurality of tags, tag support means spaced from said tag holding means, tag transport means for removing tags, one at a time, from said tag holding means and placing them on said tag support means, fastener dispensing means comprising a hollow needle through which fasteners are ejected, means for moving said fastener dispensing means relative to said tag support means to cause said needle to pass through the tag on said tag support means and means for actuating said fastener dispensing means, said tag transport means comprising means adapted to engage a tag in said tag holding means, and means for moving said tag engaging means through a first path section, wherein the engaged tag is situated in a plane substantially

perpendicular to said needle, and then through a second path section, wherein
the engaged tag is moved along said perpendicular plane, into alignment with
said tag support means.

11. The apparatus of Claim 10 wherein said tag support means is situated in a plane substantially perpendicular to said needle.
12. The apparatus of Claim 10 wherein said second path section is substantially parallel to the plane of said tag support means.
13. The apparatus of Claim 10 wherein said fastener dispensing means moves in a direction substantially perpendicular to said tag support means.
14. The apparatus of Claim 10 wherein said tag transport means comprises a carriage, an arm upon which said tag engaging means is situated and means for rotatably mounting said arm on said carriage.
15. The apparatus of Claim 14 wherein said arm mounting means comprises means for keying said arm to said carriage such that said tag engaging means aligns with the lead tag in said tag holding means, when the tag is engaged.
16. The apparatus of Claim 10 wherein said tag engaging means comprises a suction cup.
17. The apparatus of Claim 10 further comprising a work surface and means for position adjustably mounting said tag holding means on said work surface for independent positioning in two directions.
18. The apparatus of Claim 17 further comprising laser means for positioning said tag holding means mounting means.

19. The apparatus of Claim 10 further comprising means for clamping a tag to said tag support means.
20. Automatic apparatus for attaching tags to articles comprising a work surface, means, mounted on said work surface, for holding a plurality of tags, tag support means spaced from said tag holding means, tag transport means for removing tags, one at a time, from said tag holding means and placing them on said tag support means, fastener dispensing means comprising a hollow needle through which fasteners are ejected, means for moving said fastener dispensing means relative to said tag support means to cause said needle to pass through the tag on the tag support means, means for actuating said fastener dispensing means, and means for mounting said tag holding means on said work surface for independent position adjustment in two directions relative to said work surface.
21. The apparatus of Claim 20 wherein said two directions are substantially parallel to said work surface and substantially perpendicular to said work surface, respectively.
22. The apparatus of Claim 20 wherein said mounting means comprises a rack on said tag holding means and a pinion gear rotatably mounted on said work surface.
23. The apparatus of Claim 20 wherein said mounting means comprises a threaded shaft perpendicular to said work surface and an internally threaded part connected to said tag holding means, said part being rotatably received on said shaft.

24. The apparatus of Claim 20 wherein said fastener dispensing means moving means moves said fastener dispensing means in one of said directions.
25. The apparatus of Claim 24 wherein said tag transport means moves tags in the other of said directions.
26. The apparatus of Claim 20 wherein said tag transport means moves a tag through a first path section, wherein the tag is situated in a plane substantially perpendicular to said needle, and then through a second path section, wherein the tag is moved substantially within said perpendicular plane, into alignment with said tag support means.
27. The apparatus of Claim 26 wherein said second path section is in one of said directions.
28. The apparatus of Claim 20 further comprising laser means for positioning said tag holding means mounting means.
29. The apparatus of Claim 20 wherein said tag transport means comprises a linearly moveable carriage, an arm with a suction cup and means for rotatably mounting said arm on said carriage.
30. Automatic apparatus for attaching tags to articles comprising means for holding a plurality of tags, tag support means spaced from said tag holding means, tag transport means for removing tags, one at a time, from said tag holding means and placing them on said tag support means, fastener dispensing means comprising a hollow needle through which fasteners are ejected, means for moving said fastener dispensing means relative to said tag support means to cause said needle to pass through the tag on said tag support

means and means for actuating said fastener dispensing means, said tag transport means comprising a moveable carriage, an arm carrying a suction cup adapted to engage a tag in said tag holding means, and means for mounting said arm on said carriage such that said suction cup is aligned with the lead tag in said tag holding means, when the tag is engaged by said suction cup.

31. The apparatus of Claim 30 wherein said tag transport means moves a tag through a first path section, wherein the tag is situated in a plane substantially perpendicular to said needle and then through a second path section, wherein the tag is moved substantially within said perpendicular plane, into alignment with said tag support means.
32. The apparatus of Claim 31 wherein said first path section is arcuate.
33. The apparatus of Claim 31 wherein said second path section is only linear.
34. The apparatus of Claim 30 wherein said tag transport means comprises a linearly moveable carriage to which said arm is rotatably mounted.
35. The apparatus of Claim 30 further comprising a work surface and means for position adjustably mounting said tag holding means on said work surface for independent positioning in two directions.
36. The apparatus of Claim 35 further comprising laser means for positioning said tag holding means mounting means.
37. The apparatus of Claim 30 wherein said arm mounting means comprises a shaft, a bracket to which said arm is mounted, said bracket having an opening through which said shaft extends, said opening being defined in part by a

protrusion, said shaft having a slot, said protrusion being slideably received in said slot.

38. The apparatus of Claim 37 further comprising a cylinder with rotatable rod and whereas said shaft comprises said rotatable rod.

39. The apparatus of Claim 37 wherein said bracket is slideably received on said shaft.

40. Automatic apparatus for attaching tags to articles comprising a work surface, means, ~~for holding a plurality of tags~~, each of the tags having an opening, means for position adjustably mounting said tag holding means on said work surface, tag support means spaced from said tag holding means, tag transport means for removing tags, one at a time, from said tag holding means and placing them on said tag support means, fastener dispensing means comprising a hollow needle through which fasteners are ejected, means for moving said fastener dispensing means relative to said tag support means to cause said needle to pass through the opening in the tag on said tag support means, means for actuating said fastener dispensing means, and laser means for positioning said tag holding means relative to said work surface such that said tag transport means places each tag on said tag support means with said opening of the tag in alignment with said needle.

41. The apparatus of Claim 40 wherein said tag transport means moves a tag through a first path section, wherein the tag is situated in a plane substantially perpendicular to said needle and then through a second path section wherein

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the tag is moved substantially within said perpendicular plane, into alignment with said tag support means.

42. The apparatus of Claim 41 wherein said first path section is arcuate.
43. The apparatus of Claim 41 wherein said first path section is arcuate has a component and a linear component.
44. The apparatus of Claim 41 wherein said second path section is only linear.
45. The apparatus of Claim 40 wherein said tag transport means comprises a linearly moveable carriage, an arm with a suction cup, and means for rotatably mounting said arm on said carriage.
46. The apparatus of Claim 45 wherein said arm mounting means comprises means for keying said arm to said carriage such that said suction cup is aligned with the lead tag in said tag holding means, when the tag is engaged by the suction cup.
47. The apparatus of Claim 40 wherein said means for position adjustably mounting said tag holding means on said work surface independently positions said tag holding means in two directions.

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